

**AMENDMENTS TO THE CLAIMS**

Please amend the claims as follows.

1. (Currently Amended) A method for providing verification for a ~~first~~ simulation image, comprising:
  - removing nodes from the ~~first~~ simulation image to produce an optimized image and an optimized nodes image, wherein the optimized nodes image comprises information about the nodes removed from the simulation image;
  - simulating the optimized image; and
  - ~~invoking the optimized nodes image if debugging is selected;~~
  - ~~reconstructing a second simulation image using the optimized image and the optimized nodes image;~~
  - when debugging is selected,
    - simulating ~~the second~~ a reconstructed simulation image to gather simulation data, wherein the reconstructed simulation image comprises the optimized image and the optimized nodes image;
    - debugging the ~~first~~ simulation image using simulation data; and
    - verifying one selected from a group consisting of the optimized image and the ~~second~~ reconstructed simulation image.
2. (Currently Amended) The method of claim 1, wherein the ~~first~~ simulation image and the ~~second~~ reconstructed simulation image comprise a register transfer level design.
3. (Currently Amended) The method of claim 2, wherein debugging comprises comparing a reference value to a value of a corresponding register transfer level design component of at least one selected from the group consisting of the optimized image and the ~~second~~ reconstructed simulation image.

4. (Original) The method of claim 1, wherein the optimized nodes image comprises one node selected from a group consisting of a redundant node, an unobservable node, and a dangling node.
5. (Original) The method of claim 1, wherein the optimized nodes image comprises a list of optimized nodes and information about how to compute the optimized nodes image from the optimized image.
6. (Canceled)
7. (Currently Amended) The method of claim 1, further comprising:  
isolating and eliminating a bug in the first simulation image using simulation data.
8. (Currently Amended) A computer system for providing verification for a simulation image, comprising:  
a processor;  
a memory;  
a storage device; and  
software instructions stored in the memory for enabling the computer system to:  
remove nodes from the first simulation image to produce an optimized image and an optimized nodes image, wherein the optimized nodes image comprises information about the nodes removed from the simulation image;  
simulate the optimized image; and  
invoke the optimized nodes image if debugging is selected;  
reconstruct a second simulation image using the optimized image and the optimized nodes image;  
when debugging is selected,  
simulate ~~the second~~ a reconstructed simulation image to gather simulation data, wherein the reconstructed simulation image comprises the optimized image and the optimized nodes image;  
debug the first simulation image using simulation data; and

verify one selected from a group consisting of the optimized image and the ~~second~~ reconstructed simulation image.

9. (Currently Amended) The computer system of claim 8, wherein the ~~first~~ simulation image and the ~~second~~ reconstructed simulation image comprise a register transfer level design.
10. (Currently Amended) The computer system of claim 9, wherein debugging comprises comparing a reference value to a value of a corresponding register transfer level design component of at least one selected from the group consisting of the optimized image and the ~~second~~ reconstructed simulation image.
11. (Original) The computer system of claim 8, wherein the optimized nodes image comprises one node selected from a group consisting of a redundant node, an unobservable node, and a dangling node.
12. (Original) The computer system of claim 8, wherein the optimized nodes image comprises a list of optimized nodes and information about how to compute the optimized nodes image from the optimized image.
13. (Canceled)
14. (Currently Amended) The computer system of claim 8, further comprising ~~[[a]]~~ software ~~instruction~~ instructions to:  
isolate and eliminate a bug in the ~~second~~ simulation image using simulation data.
15. (Currently Amended) A system for verifying a ~~first~~ simulation image, comprising:  
an optimizer tool providing functionality to ~~optimize~~ remove nodes from the ~~first~~ simulation image ~~into~~ to produce an optimized image and an optimized nodes image, wherein the optimized nodes image comprises information about the nodes removed from the simulation image;

a test vector providing an input signal value for a component in at least one selected from a group consisting of the optimized image and a ~~second~~ reconstructed simulation image; and

a reconstructor tool of a testbench providing functionality to ~~reconstruct~~ provide the ~~second~~ reconstructed simulation image using the optimized image and the optimized nodes image, ~~if~~ when debugging is selected,

wherein the testbench provides functionality to:

simulate the reconstructed simulation image to gather simulation data,

debug simulation image using simulation data, and

verify one selected from the group consisting of the optimized image and the ~~second~~ reconstructed simulation image using the test vector.

16. (Currently Amended) The system of claim 15, wherein the ~~first~~ simulation image and the ~~second~~ reconstructed simulation image comprise a register transfer level design.

17. (Currently Amended) The system of claim 16, wherein debugging comprises comparing a reference value to a value of a corresponding register transfer level design component of at least one selected from the group consisting of the optimized image and the ~~second~~ reconstructed simulation image.

18. (Original) The system of claim 15, wherein the optimized nodes image comprises one node selected from a group consisting of a redundant node, an unobservable node, and a dangling node.

19. (Original) The system of claim 15, wherein the optimized nodes image comprises a list of optimized nodes and information about how to compute the optimized nodes image from the optimized image.

20. (Currently Amended) An apparatus providing verification for a first simulation image, comprising:

means for removing nodes from the first simulation image to produce an optimized image and an optimized nodes image, wherein the optimized nodes image comprises information about the nodes removed from the simulation image;

means for simulating the optimized image; and

means for invoking the optimized nodes image if debugging is selected;

means for reconstructing a second simulation image using the optimized image and the optimized nodes image;

means for simulating the second a reconstructed simulation image to gather simulation data, wherein the reconstructed simulation image comprises the optimized image and the optimized nodes image;

means for debugging the first simulation image using simulation data; and

means for verifying one selected from a group consisting of the optimized image and the second reconstructed simulation image.

21. (Currently Amended) The method of claim 1, wherein ~~producing the optimized image removing nodes from the simulation image further~~ comprises reorganizing an original logic of the first simulation image into a simulation friendly implementation, moving at least one sequential element to use an input of the optimized nodes image as an output of the optimized nodes image.

22. (Currently Amended) The computer system of claim 8, wherein the software instructions to remove nodes from the simulation image further comprise software instructions to move at least one sequential element to use an input of the optimized nodes image as an output of the optimized nodes image ~~producing the optimized image comprises reorganizing an original logic of the first simulation image into a simulation friendly implementation.~~